



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 11:57 AM UTC

PDB ID : 5UZE / pdb_00005uze
Title : Crystal Structure of Inosine 5'-monophosphate Dehydrogenase from Clostridium perfringens Complexed with IMP and P182
Authors : Maltseva, N.; Kim, Y.; Mulligan, R.; Makowska-Grzyska, M.; Gu, M.; Gollapalli, D.R.; Hedstrom, L.; Joachimiak, A.; Anderson, W.F.; Center for Structural Genomics of Infectious Diseases (CSGID)
Deposited on : 2017-02-26
Resolution : 2.27 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

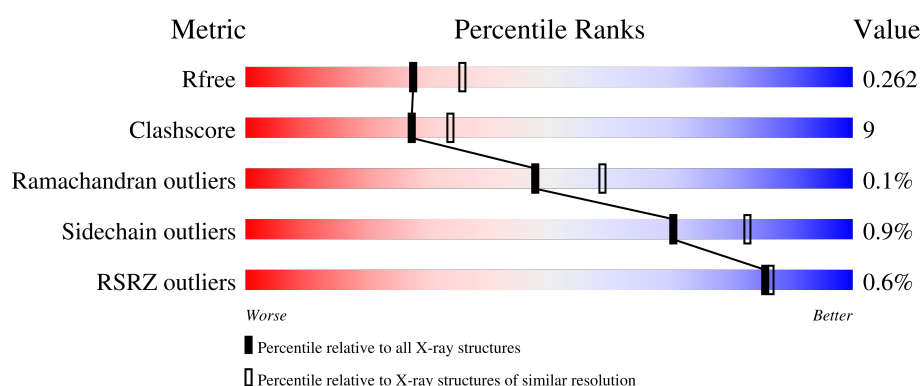
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.27 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	9078 (2.30-2.26)
Clashscore	190562	9802 (2.30-2.26)
Ramachandran outliers	187476	9690 (2.30-2.26)
Sidechain outliers	187428	9691 (2.30-2.26)
RSRZ outliers	180081	9085 (2.30-2.26)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	363	75% 19% 6%
1	B	363	76% 18% 6%
1	C	363	74% 19% • 6%
1	D	363	74% 20% 6%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 10463 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Inosine-5'-monophosphate dehydrogenase, Inosine-5'-monophosphate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	341	Total	C	N	O	S	0	0	0
			2512	1580	432	481	19			
1	B	343	Total	C	N	O	S	0	0	0
			2532	1592	438	483	19			
1	C	341	Total	C	N	O	S	1	0	0
			2508	1574	434	481	19			
1	D	342	Total	C	N	O	S	0	0	0
			2523	1586	436	482	19			

There are 24 discrepancies between the modelled and reference sequences:

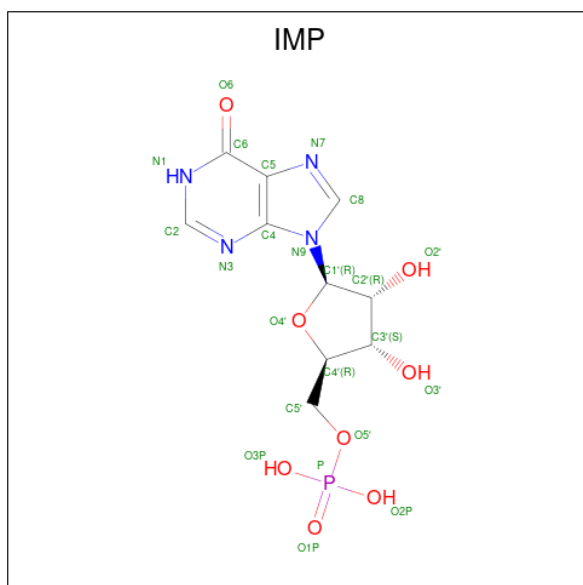
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	expression tag	UNP A0A0H2YRZ7
A	-1	ASN	-	expression tag	UNP A0A0H2YRZ7
A	0	ALA	-	expression tag	UNP A0A0H2YRZ7
A	89	SER	-	linker	UNP A0A0H2YRZ7
A	90	GLY	-	linker	UNP A0A0H2YRZ7
A	91	GLY	-	linker	UNP A0A0H2YRZ7
B	-2	SER	-	expression tag	UNP A0A0H2YRZ7
B	-1	ASN	-	expression tag	UNP A0A0H2YRZ7
B	0	ALA	-	expression tag	UNP A0A0H2YRZ7
B	89	SER	-	linker	UNP A0A0H2YRZ7
B	90	GLY	-	linker	UNP A0A0H2YRZ7
B	91	GLY	-	linker	UNP A0A0H2YRZ7
C	-2	SER	-	expression tag	UNP A0A0H2YRZ7
C	-1	ASN	-	expression tag	UNP A0A0H2YRZ7
C	0	ALA	-	expression tag	UNP A0A0H2YRZ7
C	89	SER	-	linker	UNP A0A0H2YRZ7
C	90	GLY	-	linker	UNP A0A0H2YRZ7
C	91	GLY	-	linker	UNP A0A0H2YRZ7
D	-2	SER	-	expression tag	UNP A0A0H2YRZ7
D	-1	ASN	-	expression tag	UNP A0A0H2YRZ7

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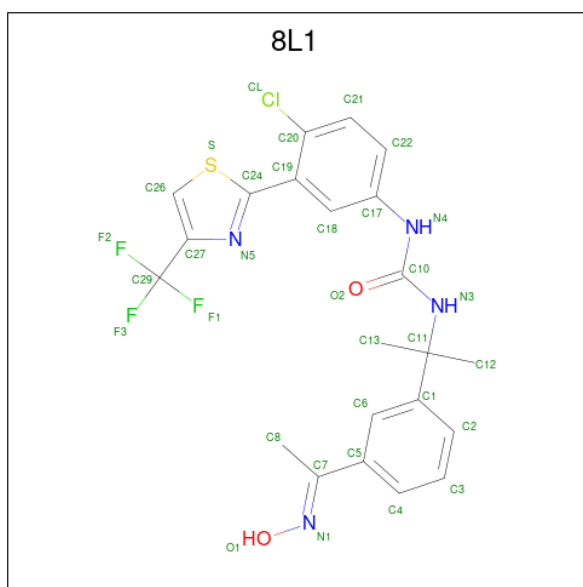
Chain	Residue	Modelled	Actual	Comment	Reference
D	0	ALA	-	expression tag	UNP A0A0H2YRZ7
D	89	SER	-	linker	UNP A0A0H2YRZ7
D	90	GLY	-	linker	UNP A0A0H2YRZ7
D	91	GLY	-	linker	UNP A0A0H2YRZ7

- Molecule 2 is INOSINIC ACID (CCD ID: IMP) (formula: C₁₀H₁₃N₄O₈P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			23	10	4	8	1		
2	B	1	Total	C	N	O	P	0	0
			23	10	4	8	1		
2	C	1	Total	C	N	O	P	0	0
			23	10	4	8	1		
2	D	1	Total	C	N	O	P	0	0
			23	10	4	8	1		

- Molecule 3 is N-{4-chloro-3-[4-(trifluoromethyl)-1,3-thiazol-2-yl]phenyl}-N'-(2-{3-[(1E)-N-hydroxyethanimidoyl]phenyl}propan-2-yl)urea (CCD ID: 8L1) (formula: C₂₂H₂₀ClF₃N₄O₂S).

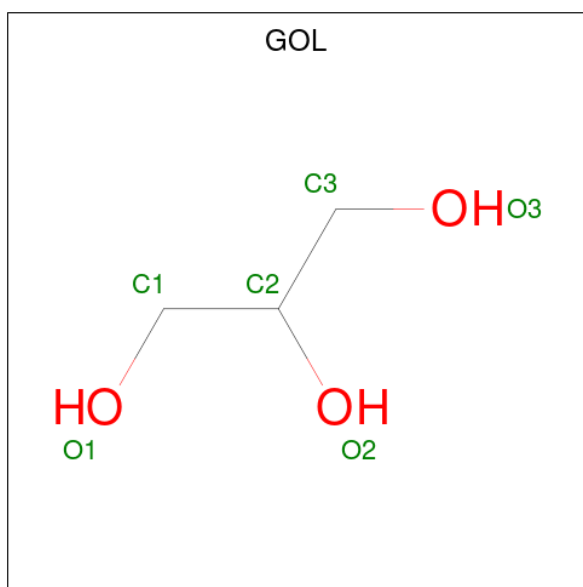


Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
3	A	1	Total	C	Cl	F	N	O	S	0	0
			33	22	1	3	4	2	1		
3	B	1	Total	C	Cl	F	N	O	S	0	0
			33	22	1	3	4	2	1		
3	C	1	Total	C	Cl	F	N	O	S	0	0
			33	22	1	3	4	2	1		
3	D	1	Total	C	Cl	F	N	O	S	0	0
			33	22	1	3	4	2	1		

- Molecule 4 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total	0	0
			1 K		
4	B	1	Total	0	0
			1 K		

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			6	3	3		

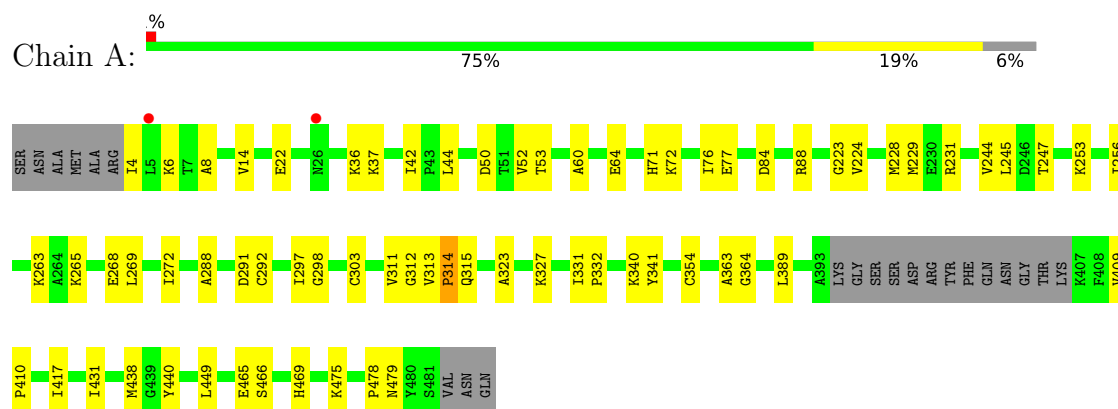
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	39	Total	O	0	0
			39	39		
6	B	41	Total	O	0	0
			41	41		
6	C	37	Total	O	0	0
			37	37		
6	D	39	Total	O	0	0
			39	39		

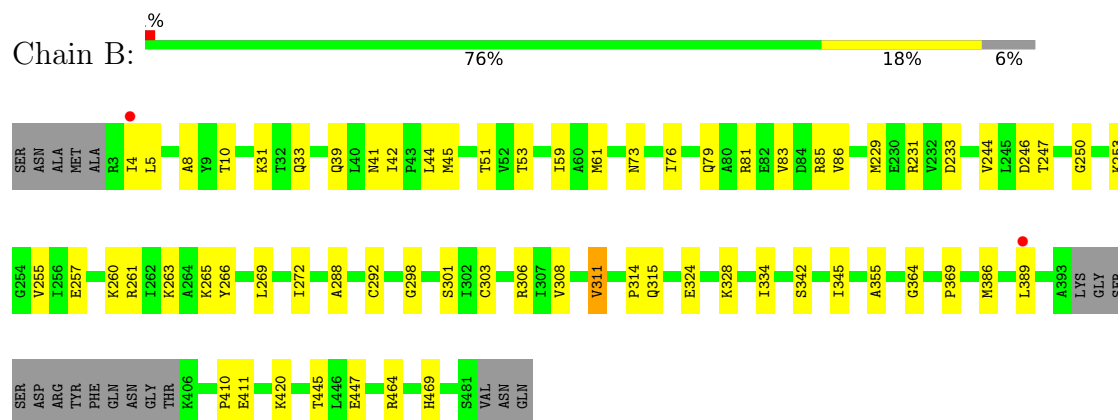
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

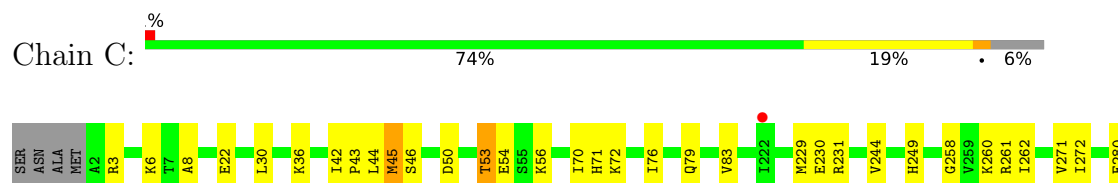
- Molecule 1: Inosine-5'-monophosphate dehydrogenase, Inosine-5'-monophosphate dehydrogenase

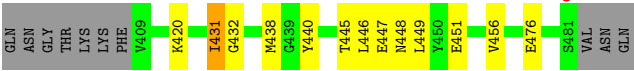


- Molecule 1: Inosine-5'-monophosphate dehydrogenase, Inosine-5'-monophosphate dehydrogenase

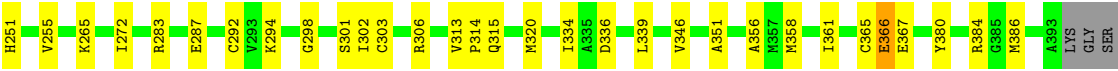


- Molecule 1: Inosine-5'-monophosphate dehydrogenase, Inosine-5'-monophosphate dehydrogenase





● Molecule 1: Inosine-5'-monophosphate dehydrogenase,Inosine-5'-monophosphate dehydroge-
nase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	64.78Å 77.66Å 80.32Å 110.03° 103.99° 105.46°	Depositor
Resolution (Å)	31.39 – 2.27 31.39 – 2.27	Depositor EDS
% Data completeness (in resolution range)	95.1 (31.39-2.27) 96.3 (31.39-2.27)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.76 (at 2.24Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.194 , 0.255 0.207 , 0.262	Depositor DCC
R_{free} test set	2855 reflections (4.57%)	wwPDB-VP
Wilson B-factor (Å ²)	36.2	Xtriage
Anisotropy	0.239	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 45.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	0.001 for -h,-l,-k	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10463	wwPDB-VP
Average B, all atoms (Å ²)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.13% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: IMP, K, 8L1, GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.42	0/2545	0.67	6/3434 (0.2%)
1	B	0.43	0/2565	0.63	3/3459 (0.1%)
1	C	0.44	0/2540	0.63	5/3428 (0.1%)
1	D	0.43	2/2556 (0.1%)	0.61	4/3448 (0.1%)
All	All	0.43	2/10206 (0.0%)	0.64	18/13769 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	366	GLU	C-N	-8.40	1.23	1.33
1	D	367	GLU	C-N	5.20	1.44	1.33

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	53	THR	N-CA-C	9.09	123.93	108.02
1	B	53	THR	N-CA-C	8.55	122.98	108.02
1	B	315	GLN	N-CA-C	8.14	120.15	111.28
1	C	315	GLN	N-CA-C	8.04	120.05	111.28
1	A	315	GLN	N-CA-C	7.77	119.75	111.28
1	D	315	GLN	N-CA-C	6.98	118.89	111.28
1	D	365	CYS	N-CA-C	5.64	117.97	110.53
1	B	311	VAL	N-CA-C	5.63	116.59	108.48
1	C	303	CYS	N-CA-C	5.47	118.15	109.24
1	A	478	PRO	CA-C-N	5.22	131.44	122.09
1	A	478	PRO	C-N-CA	5.22	131.44	122.09
1	C	53	THR	N-CA-C	5.18	117.41	109.07
1	A	313	VAL	CA-C-N	-5.10	114.70	119.90
1	A	313	VAL	C-N-CA	-5.10	114.70	119.90
1	D	313	VAL	CA-C-N	-5.04	114.57	119.76

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	313	VAL	C-N-CA	-5.04	114.57	119.76
1	C	313	VAL	CA-C-N	-5.01	114.60	119.76
1	C	313	VAL	C-N-CA	-5.01	114.60	119.76

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2512	0	2578	48	1
1	B	2532	0	2604	49	0
1	C	2508	0	2574	57	0
1	D	2523	0	2591	49	1
2	A	23	0	11	1	0
2	B	23	0	11	1	0
2	C	23	0	11	2	0
2	D	23	0	11	0	0
3	A	33	0	0	1	0
3	B	33	0	0	1	0
3	C	33	0	0	1	0
3	D	33	0	0	1	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
5	B	6	0	8	0	0
6	A	39	0	0	0	0
6	B	41	0	0	0	0
6	C	37	0	0	0	0
6	D	39	0	0	1	0
All	All	10463	0	10399	189	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

All (189) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:303:CYS:SG	2:C:500:IMP:H2	2.31	0.70
1:C:30:LEU:HD12	1:C:431:ILE:HD12	1.76	0.66
1:C:272:ILE:HG12	1:C:292:CYS:HB3	1.77	0.65
1:C:324:GLU:O	1:C:328:LYS:HG2	1.96	0.64
1:C:30:LEU:CD1	1:C:431:ILE:HD12	2.29	0.63
1:C:283:ARG:HG2	1:C:329:LEU:HD11	1.80	0.63
1:A:42:ILE:HD12	1:A:44:LEU:HD12	1.81	0.62
1:C:445:THR:HG23	1:C:448:ASN:H	1.64	0.62
1:A:479:ASN:HD22	1:B:410:PRO:HG2	1.65	0.61
1:C:230:GLU:N	1:C:230:GLU:OE1	2.31	0.61
1:D:29:SER:OG	1:D:31:LYS:HE3	2.02	0.60
1:B:8:ALA:HB3	1:B:314:PRO:HD2	1.83	0.60
3:D:501:8L1:S	3:D:501:8L1:CL	2.97	0.60
1:D:233:ASP:OD1	1:D:265:LYS:NZ	2.35	0.60
1:C:447:GLU:O	1:C:451:GLU:HG2	2.01	0.60
1:C:8:ALA:HB3	1:C:314:PRO:HD2	1.85	0.59
1:B:389:LEU:HD21	1:B:410:PRO:HG3	1.84	0.59
1:C:229:MET:HE2	1:C:261:ARG:HG2	1.85	0.59
1:A:37:LYS:NZ	1:A:268:GLU:OE2	2.34	0.59
1:B:42:ILE:HD12	1:B:44:LEU:HD12	1.84	0.59
1:C:79:GLN:O	1:C:83:VAL:HG23	2.02	0.59
1:D:244:VAL:HG22	1:D:272:ILE:HB	1.84	0.59
1:C:72:LYS:HA	1:C:79:GLN:NE2	2.18	0.58
1:C:46:SER:OG	1:C:53:THR:OG1	2.21	0.58
1:B:260:LYS:NZ	1:B:288:ALA:HA	2.19	0.57
1:D:87:LYS:HG3	1:D:239:LYS:HB2	1.86	0.57
1:A:409:VAL:HG21	1:C:432:GLY:HA3	1.86	0.57
1:D:298:GLY:HA2	1:D:303:CYS:SG	2.43	0.57
1:D:380:TYR:CG	1:D:416:ARG:HD3	2.39	0.57
1:C:438:MET:HG2	1:C:449:LEU:HD13	1.87	0.57
1:D:69:ILE:HD13	1:D:219:GLY:HA3	1.87	0.57
1:C:8:ALA:CB	1:C:314:PRO:HD2	2.35	0.56
1:C:43:PRO:HG3	1:C:446:LEU:HD11	1.86	0.56
1:C:76:ILE:HD11	1:C:230:GLU:C	2.30	0.56
1:A:14:VAL:HG11	1:B:4:ILE:HD11	1.87	0.56
1:C:304:THR:O	1:C:308:VAL:HG22	2.06	0.55
1:C:476:GLU:H	1:C:476:GLU:CD	2.14	0.55
1:D:250:GLY:HA2	1:D:255:VAL:HG21	1.89	0.55
1:B:45:MET:HE1	1:B:334:ILE:HG12	1.87	0.55
1:C:56:LYS:HE3	1:C:367:GLU:HA	1.88	0.55
1:A:440:TYR:HB3	1:B:311:VAL:HG11	1.89	0.55
1:B:76:ILE:HG12	1:B:231:ARG:HG3	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:298:GLY:HA2	1:B:303:CYS:SG	2.46	0.55
1:D:72:LYS:HE2	1:D:223:GLY:N	2.22	0.55
1:A:256:ILE:HG23	1:A:288:ALA:HB2	1.89	0.54
1:C:389:LEU:HD11	1:D:478:PRO:HD3	1.88	0.54
1:A:77:GLU:H	1:A:77:GLU:CD	2.16	0.54
1:D:81:ARG:O	1:D:85:ARG:HG2	2.07	0.54
1:D:235:VAL:HG13	1:D:240:VAL:HG11	1.90	0.54
1:C:336:ASP:OD1	2:C:500:IMP:O2'	2.24	0.54
1:D:302:ILE:HD12	1:D:302:ILE:C	2.32	0.54
1:B:31:LYS:HE3	1:B:41:ASN:ND2	2.23	0.54
1:C:50:ASP:HA	1:C:71:HIS:CD2	2.43	0.54
1:A:60:ALA:O	1:A:64:GLU:HG2	2.08	0.53
1:A:303:CYS:SG	2:A:500:IMP:H2	2.49	0.53
1:C:54:GLU:HB2	1:C:369:PRO:HG3	1.91	0.52
1:D:320:MET:HG3	1:D:351:ALA:HB1	1.90	0.52
1:A:389:LEU:CD1	1:A:410:PRO:HG3	2.38	0.52
3:A:501:8L1:S	3:A:501:8L1:CL	3.04	0.52
1:B:260:LYS:HZ3	1:B:288:ALA:HA	1.74	0.52
1:D:235:VAL:HG22	1:D:240:VAL:HB	1.90	0.52
1:C:42:ILE:CG2	1:C:431:ILE:HD11	2.40	0.52
1:D:298:GLY:HA3	1:D:306:ARG:HE	1.76	0.51
1:A:224:VAL:HG23	1:A:224:VAL:O	2.10	0.51
1:D:235:VAL:HG11	1:D:243:ILE:HD11	1.91	0.51
1:C:376:GLN:O	1:C:378:ARG:HG3	2.10	0.51
1:D:294:LYS:HG3	1:D:334:ILE:HB	1.93	0.51
1:C:258:GLY:O	1:C:262:ILE:HG13	2.11	0.51
1:D:283:ARG:O	1:D:287:GLU:HG3	2.11	0.51
1:A:244:VAL:HG22	1:A:272:ILE:HB	1.93	0.51
1:D:8:ALA:CB	1:D:314:PRO:HD2	2.40	0.51
1:B:445:THR:OG1	1:B:447:GLU:HG2	2.12	0.50
1:D:429:GLN:HE21	1:D:479:ASN:HB3	1.76	0.50
1:D:23:VAL:HA	1:D:27:GLU:OE2	2.10	0.50
1:B:8:ALA:CB	1:B:314:PRO:HD2	2.41	0.50
1:C:76:ILE:HD11	1:C:230:GLU:O	2.10	0.50
1:C:42:ILE:HG21	1:C:431:ILE:HD11	1.93	0.50
1:B:244:VAL:HG22	1:B:272:ILE:HB	1.94	0.50
1:A:389:LEU:HD13	1:A:410:PRO:HG3	1.94	0.49
1:D:272:ILE:HG12	1:D:292:CYS:HB3	1.94	0.49
1:A:229:MET:HE2	1:A:265:LYS:HD3	1.95	0.49
1:A:223:GLY:O	1:A:228:MET:HG3	2.13	0.49
1:B:229:MET:HE2	1:B:265:LYS:HD3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:45:MET:HE2	1:B:355:ALA:HB3	1.94	0.48
1:A:50:ASP:HA	1:A:71:HIS:CD2	2.48	0.48
1:A:323:ALA:O	1:A:327:LYS:HG3	2.14	0.48
1:C:280:GLU:HA	1:C:283:ARG:NH1	2.28	0.48
3:B:502:8L1:S	3:B:502:8L1:CL	3.09	0.47
1:C:6:LYS:HG2	1:D:456:VAL:HG23	1.96	0.47
1:D:294:LYS:NZ	1:D:336:ASP:OD2	2.34	0.47
1:A:8:ALA:CB	1:A:314:PRO:HD2	2.45	0.47
1:B:33:GLN:HE22	1:B:39:GLN:HE21	1.61	0.47
1:B:253:LYS:HE2	1:B:257:GLU:OE2	2.15	0.47
1:B:324:GLU:O	1:B:328:LYS:HG3	2.14	0.47
1:A:42:ILE:HG21	1:A:431:ILE:HD11	1.97	0.47
1:A:272:ILE:HG12	1:A:292:CYS:HB3	1.96	0.47
1:A:22:GLU:H	1:A:22:GLU:CD	2.19	0.47
1:A:52:VAL:HG22	1:A:363:ALA:HB2	1.96	0.47
1:D:8:ALA:HB3	1:D:314:PRO:HD2	1.95	0.47
1:C:324:GLU:O	1:C:328:LYS:CG	2.60	0.47
1:D:272:ILE:HA	1:D:292:CYS:O	2.15	0.47
1:A:4:ILE:O	1:A:4:ILE:HG13	2.14	0.47
1:B:342:SER:HA	1:B:345:ILE:HD12	1.97	0.47
1:A:72:LYS:HE3	1:A:223:GLY:H	1.80	0.47
1:A:469:HIS:O	1:B:301:SER:HB2	2.15	0.47
1:C:271:VAL:HG13	1:C:290:ALA:HA	1.98	0.46
1:A:8:ALA:HB3	1:A:314:PRO:HD2	1.98	0.46
1:A:253:LYS:HD3	1:C:22:GLU:HG2	1.98	0.46
1:C:378:ARG:HD3	1:C:380:TYR:OH	2.15	0.46
1:D:76:ILE:HG12	1:D:231:ARG:HG3	1.98	0.46
1:B:244:VAL:HG12	1:B:246:ASP:HB3	1.97	0.46
1:B:247:THR:HG21	1:B:255:VAL:HG22	1.96	0.46
1:A:42:ILE:HD13	1:A:431:ILE:HD11	1.97	0.46
1:D:302:ILE:C	1:D:302:ILE:CD1	2.90	0.45
1:B:229:MET:HG2	1:B:261:ARG:HD3	1.98	0.45
1:B:73:ASN:HB2	1:B:386:MET:HE1	1.99	0.45
1:B:303:CYS:SG	2:B:501:IMP:H2	2.57	0.45
1:A:479:ASN:HD22	1:B:410:PRO:CG	2.27	0.45
1:B:45:MET:HE1	1:B:334:ILE:CG1	2.46	0.45
1:A:479:ASN:HD22	1:B:410:PRO:CD	2.30	0.45
1:C:244:VAL:HG22	1:C:272:ILE:HB	1.98	0.45
1:D:358:MET:HG2	1:D:361:ILE:HD12	1.99	0.45
1:D:346:VAL:HG22	1:D:434:ILE:HA	1.98	0.44
1:D:467:HIS:O	1:D:469:HIS:HD2	2.01	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:56:LYS:CE	1:C:367:GLU:HA	2.47	0.44
1:C:302:ILE:HD13	1:C:385:GLY:HA2	1.99	0.44
1:A:475:LYS:HD3	1:A:475:LYS:HA	1.77	0.44
1:A:263:LYS:NZ	1:A:269:LEU:O	2.45	0.44
1:C:301:SER:HB2	1:D:469:HIS:O	2.17	0.44
1:A:291:ASP:C	1:A:331:ILE:HD11	2.43	0.44
1:D:220:ALA:CB	1:D:235:VAL:HG21	2.47	0.44
1:A:84:ASP:O	1:A:88:ARG:HG3	2.19	0.43
1:B:61:MET:HE3	1:B:61:MET:HB3	1.86	0.43
1:D:83:VAL:HG21	1:D:235:VAL:CG2	2.48	0.43
1:B:389:LEU:HD23	1:B:410:PRO:HB3	1.99	0.43
1:C:445:THR:OG1	1:C:446:LEU:N	2.51	0.43
1:A:6:LYS:HG2	1:C:456:VAL:HG23	1.99	0.43
1:D:59:ILE:HG13	1:D:86:VAL:HG22	2.00	0.43
1:B:389:LEU:HD21	1:B:410:PRO:CG	2.47	0.43
1:C:76:ILE:CD1	1:C:231:ARG:HA	2.49	0.43
1:C:249:HIS:HB3	3:C:501:8L1:S	2.59	0.43
1:C:431:ILE:HD13	1:C:431:ILE:HA	1.93	0.43
1:B:45:MET:HE1	1:B:334:ILE:CD1	2.49	0.42
1:B:59:ILE:HG12	1:B:86:VAL:HG13	2.01	0.42
1:B:81:ARG:HD2	1:B:85:ARG:NH1	2.34	0.42
1:C:36:LYS:N	1:C:36:LYS:HD3	2.34	0.42
1:A:297:ILE:HG22	1:A:312:GLY:HA2	2.02	0.42
1:B:250:GLY:HA2	1:B:255:VAL:HG21	2.00	0.42
1:D:234:ALA:HA	1:D:237:LYS:NZ	2.35	0.42
1:D:339:LEU:CD1	1:D:356:ALA:HB1	2.50	0.42
1:A:438:MET:HG2	1:A:449:LEU:HD13	2.01	0.42
1:B:308:VAL:HG21	1:B:411:GLU:HG2	2.00	0.42
1:C:420:LYS:HE2	1:C:420:LYS:HB2	1.87	0.42
1:B:469:HIS:O	1:D:301:SER:HB2	2.19	0.42
1:B:51:THR:C	1:B:369:PRO:HD2	2.45	0.42
1:C:294:LYS:HG3	1:C:334:ILE:HB	2.01	0.42
1:D:358:MET:HE2	1:D:358:MET:HB2	1.97	0.42
1:B:364:GLY:HA3	1:B:420:LYS:HE3	2.01	0.42
1:A:224:VAL:HG12	1:A:245:LEU:HD11	2.02	0.41
1:A:298:GLY:HA2	1:A:303:CYS:SG	2.60	0.41
1:B:389:LEU:CD2	1:B:410:PRO:HG3	2.49	0.41
1:C:339:LEU:CD1	1:C:356:ALA:HB1	2.51	0.41
1:D:464:ARG:NH1	6:D:604:HOH:O	2.52	0.41
1:A:364:GLY:N	1:A:417:ILE:HD11	2.35	0.41
1:D:73:ASN:HB2	1:D:386:MET:HE1	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:466:SER:HA	1:B:306:ARG:HD2	2.02	0.41
1:D:384:ARG:HA	1:D:414:GLU:HA	2.03	0.41
1:A:311:VAL:HG11	1:C:440:TYR:HB3	2.02	0.41
1:B:79:GLN:O	1:B:83:VAL:HG12	2.20	0.41
1:C:45:MET:SD	1:C:334:ILE:HD13	2.61	0.41
1:C:356:ALA:HB3	1:C:358:MET:CE	2.51	0.41
1:D:233:ASP:O	1:D:237:LYS:HG3	2.21	0.41
1:D:238:ALA:O	1:D:239:LYS:HB2	2.21	0.41
1:A:76:ILE:HG23	1:A:231:ARG:HA	2.03	0.41
1:C:285:LEU:HA	1:C:285:LEU:HD23	1.83	0.41
1:C:3:ARG:HB2	1:D:320:MET:HE3	2.02	0.41
1:A:332:PRO:HB2	1:A:354:CYS:SG	2.61	0.41
1:B:263:LYS:NZ	1:B:269:LEU:O	2.51	0.41
1:D:59:ILE:O	1:D:63:ARG:HG2	2.21	0.41
1:C:302:ILE:HD13	1:C:385:GLY:CA	2.51	0.41
1:D:222:ILE:HG13	1:D:243:ILE:HD12	2.03	0.40
1:A:224:VAL:HA	1:A:228:MET:HE2	2.02	0.40
1:A:465:GLU:OE2	1:B:10:THR:OG1	2.39	0.40
1:B:81:ARG:O	1:B:85:ARG:HG3	2.21	0.40
1:B:233:ASP:OD2	1:B:266:TYR:OH	2.29	0.40
1:B:272:ILE:HA	1:B:292:CYS:O	2.21	0.40
1:D:249:HIS:CE1	1:D:251:HIS:HB3	2.57	0.40
1:A:340:LYS:HG3	1:A:341:TYR:CD2	2.57	0.40
1:C:260:LYS:HZ2	1:C:260:LYS:HG2	1.59	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:LYS:O	1:D:366:GLU:OE2[1_444]	2.00	0.20

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was

analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	337/363 (93%)	324 (96%)	13 (4%)	0	100	100
1	B	339/363 (93%)	326 (96%)	13 (4%)	0	100	100
1	C	337/363 (93%)	324 (96%)	13 (4%)	0	100	100
1	D	338/363 (93%)	323 (96%)	14 (4%)	1 (0%)	36	44
All	All	1351/1452 (93%)	1297 (96%)	53 (4%)	1 (0%)	48	59

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	5	LEU

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	264/282 (94%)	262 (99%)	2 (1%)	73	84
1	B	266/282 (94%)	264 (99%)	2 (1%)	73	84
1	C	263/282 (93%)	257 (98%)	6 (2%)	44	60
1	D	265/282 (94%)	265 (100%)	0	100	100
All	All	1058/1128 (94%)	1048 (99%)	10 (1%)	70	82

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	247	THR
1	A	314	PRO
1	B	5	LEU
1	B	464	ARG
1	C	44	LEU
1	C	45	MET
1	C	70	ILE
1	C	328	LYS

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Mol	Chain	Res	Type
1	C	358	MET
1	C	431	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	429	GLN
1	A	448	ASN
1	A	479	ASN
1	B	39	GLN
1	B	41	ASN
1	B	429	GLN
1	B	448	ASN
1	B	458	GLN
1	C	33	GLN
1	D	429	GLN
1	D	452	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 2 are monoatomic - leaving 9 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	8L1	A	501	-	35,35,35	2.09	8 (22%)	50,52,52	3.21	10 (20%)
2	IMP	B	501	-	25,25,25	1.34	5 (20%)	37,38,38	2.17	10 (27%)
3	8L1	D	501	-	35,35,35	2.34	9 (25%)	50,52,52	3.22	14 (28%)
3	8L1	B	502	-	35,35,35	2.15	7 (20%)	50,52,52	3.18	12 (24%)
5	GOL	B	504	-	5,5,5	0.29	0	5,5,5	0.32	0
2	IMP	A	500	-	25,25,25	1.37	4 (16%)	37,38,38	2.02	10 (27%)
3	8L1	C	501	-	35,35,35	2.05	6 (17%)	50,52,52	3.21	12 (24%)
2	IMP	C	500	-	25,25,25	1.29	3 (12%)	37,38,38	2.14	9 (24%)
2	IMP	D	500	-	25,25,25	1.33	3 (12%)	37,38,38	2.07	9 (24%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	8L1	A	501	-	-	6/31/31/31	0/3/3/3
2	IMP	B	501	-	-	0/10/26/26	0/3/3/3
3	8L1	D	501	-	-	3/31/31/31	0/3/3/3
3	8L1	B	502	-	-	3/31/31/31	0/3/3/3
5	GOL	B	504	-	-	0/4/4/4	-
2	IMP	A	500	-	-	0/10/26/26	0/3/3/3
3	8L1	C	501	-	-	5/31/31/31	0/3/3/3
2	IMP	C	500	-	-	0/10/26/26	0/3/3/3
2	IMP	D	500	-	-	0/10/26/26	0/3/3/3

All (45) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	501	8L1	C8-C7	-9.95	1.31	1.50
3	B	502	8L1	C8-C7	-9.44	1.32	1.50
3	A	501	8L1	C8-C7	-9.35	1.33	1.50
3	C	501	8L1	C8-C7	-9.27	1.33	1.50
3	D	501	8L1	C11-C1	-4.76	1.48	1.53
3	A	501	8L1	C26-C27	4.18	1.40	1.35
3	B	502	8L1	C26-C27	4.08	1.40	1.35
3	C	501	8L1	C26-C27	3.77	1.39	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	501	8L1	C11-N3	-3.41	1.44	1.47
3	C	501	8L1	C7-N1	3.18	1.34	1.28
3	D	501	8L1	C26-C27	3.17	1.39	1.35
3	D	501	8L1	C17-N4	-3.16	1.35	1.41
3	B	502	8L1	C19-C24	3.10	1.52	1.47
3	A	501	8L1	C7-N1	3.09	1.33	1.28
3	B	502	8L1	C11-C1	-2.95	1.50	1.53
3	B	502	8L1	C7-N1	2.91	1.33	1.28
2	B	501	IMP	C6-N1	-2.89	1.33	1.39
3	A	501	8L1	C11-C1	-2.82	1.50	1.53
3	B	502	8L1	C20-CL	2.76	1.80	1.73
2	D	500	IMP	C6-N1	-2.72	1.33	1.39
3	A	501	8L1	C20-CL	2.72	1.80	1.73
2	A	500	IMP	C6-N1	-2.69	1.33	1.39
3	C	501	8L1	C20-CL	2.67	1.79	1.73
2	A	500	IMP	C5-N7	-2.64	1.33	1.39
2	C	500	IMP	C6-N1	-2.53	1.34	1.39
3	B	502	8L1	C17-N4	-2.49	1.36	1.41
2	D	500	IMP	C5-N7	-2.48	1.34	1.39
2	B	501	IMP	C5-N7	-2.47	1.34	1.39
3	C	501	8L1	C19-C24	2.44	1.51	1.47
2	C	500	IMP	C5-N7	-2.44	1.34	1.39
2	C	500	IMP	C4-N9	-2.30	1.32	1.38
3	A	501	8L1	C17-N4	-2.30	1.37	1.41
2	D	500	IMP	C4-N9	-2.30	1.32	1.38
3	D	501	8L1	C7-N1	2.27	1.32	1.28
2	A	500	IMP	C4-N9	-2.26	1.32	1.38
3	D	501	8L1	C20-CL	2.19	1.78	1.73
3	C	501	8L1	C17-N4	-2.19	1.37	1.41
2	B	501	IMP	C4-N9	-2.17	1.32	1.38
2	B	501	IMP	P-O3P	-2.14	1.46	1.54
3	A	501	8L1	C11-N3	-2.12	1.45	1.47
2	A	500	IMP	P-O3P	-2.09	1.47	1.54
2	B	501	IMP	C8-N9	-2.06	1.32	1.37
3	D	501	8L1	C13-C11	-2.05	1.51	1.53
3	A	501	8L1	C19-C24	2.05	1.50	1.47
3	D	501	8L1	C12-C11	-2.04	1.51	1.53

All (86) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	502	8L1	C26-S-C24	11.75	97.04	89.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	501	8L1	C26-S-C24	11.62	96.96	89.51
3	D	501	8L1	C26-S-C24	11.52	96.90	89.51
3	A	501	8L1	C26-C27-N5	11.12	123.40	114.13
3	A	501	8L1	C26-S-C24	10.93	96.52	89.51
3	D	501	8L1	C26-C27-N5	10.66	123.02	114.13
3	D	501	8L1	C27-C26-S	-10.27	100.78	111.32
3	C	501	8L1	C26-C27-N5	10.19	122.63	114.13
3	A	501	8L1	C27-C26-S	-10.18	100.88	111.32
3	C	501	8L1	C27-C26-S	-9.91	101.15	111.32
3	B	502	8L1	C27-C26-S	-9.45	101.62	111.32
3	B	502	8L1	C26-C27-N5	9.34	121.92	114.13
3	A	501	8L1	O1-N1-C7	6.81	122.15	112.65
3	B	502	8L1	S-C24-N5	-6.70	107.60	114.22
3	B	502	8L1	O1-N1-C7	6.62	121.88	112.65
3	C	501	8L1	O1-N1-C7	6.39	121.56	112.65
2	B	501	IMP	C5-C6-N1	6.19	119.68	110.78
3	D	501	8L1	O1-N1-C7	6.12	121.19	112.65
2	D	500	IMP	C5-C6-N1	6.12	119.58	110.78
3	C	501	8L1	S-C24-N5	-6.10	108.19	114.22
2	C	500	IMP	C5-C6-N1	6.07	119.51	110.78
3	D	501	8L1	S-C24-N5	-5.58	108.71	114.22
2	A	500	IMP	C5-C6-N1	5.57	118.80	110.78
2	B	501	IMP	C5-C4-N3	-5.52	119.14	127.27
2	C	500	IMP	C5-C4-N3	-5.39	119.34	127.27
2	B	501	IMP	C2-N3-C4	5.22	120.72	111.53
2	D	500	IMP	C2-N3-C4	5.16	120.60	111.53
2	D	500	IMP	C5-C4-N3	-5.08	119.78	127.27
3	A	501	8L1	S-C24-N5	-5.08	109.20	114.22
2	C	500	IMP	C2-N3-C4	5.02	120.36	111.53
2	A	500	IMP	C5-C4-N3	-4.97	119.95	127.27
2	A	500	IMP	C2-N3-C4	4.74	119.87	111.53
3	A	501	8L1	F3-C29-C27	-4.42	103.79	112.86
3	C	501	8L1	C19-C24-N5	4.40	129.80	122.29
2	D	500	IMP	N1-C2-N3	-4.23	120.63	125.50
3	B	502	8L1	C19-C24-N5	4.06	129.23	122.29
3	D	501	8L1	C18-C19-C24	-3.83	113.89	120.08
3	A	501	8L1	C19-C24-N5	3.73	128.65	122.29
3	D	501	8L1	C1-C11-N3	3.69	115.79	110.81
3	C	501	8L1	C18-C19-C24	-3.66	114.17	120.08
3	D	501	8L1	C19-C24-N5	3.65	128.52	122.29
2	C	500	IMP	C2-N1-C6	-3.60	120.15	125.09
2	B	501	IMP	N1-C2-N3	-3.58	121.37	125.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	IMP	C2-N1-C6	-3.44	120.37	125.09
3	A	501	8L1	C18-C19-C24	-3.43	114.53	120.08
2	A	500	IMP	C2-N1-C6	-3.31	120.55	125.09
2	C	500	IMP	N1-C2-N3	-3.26	121.74	125.50
2	A	500	IMP	N1-C2-N3	-3.19	121.83	125.50
3	B	502	8L1	F3-C29-C27	-3.12	106.45	112.86
3	B	502	8L1	C18-C19-C24	-3.12	115.04	120.08
2	D	500	IMP	C2-N1-C6	-3.03	120.94	125.09
3	B	502	8L1	C13-C11-C1	-2.94	103.15	110.54
3	C	501	8L1	C8-C7-C5	2.68	123.83	119.48
3	C	501	8L1	F3-C29-C27	-2.63	107.45	112.86
2	A	500	IMP	O3P-P-O5'	2.55	113.32	106.67
2	C	500	IMP	C4-C5-N7	-2.52	106.67	110.67
3	C	501	8L1	C11-N3-C10	2.48	129.16	124.01
2	B	501	IMP	C3'-C2'-C1'	2.46	106.12	101.46
2	B	501	IMP	C4-C5-N7	-2.45	106.79	110.67
2	B	501	IMP	N9-C4-N3	2.43	132.43	126.90
2	D	500	IMP	N9-C8-N7	-2.40	108.94	113.40
2	A	500	IMP	C4-C5-N7	-2.39	106.89	110.67
2	A	500	IMP	N9-C8-N7	-2.36	109.02	113.40
2	D	500	IMP	N9-C4-N3	2.34	132.24	126.90
2	B	501	IMP	C6-C5-N7	2.31	134.50	130.29
3	D	501	8L1	F3-C29-C27	-2.30	108.14	112.86
3	B	502	8L1	C6-C5-C7	-2.29	117.37	120.53
2	C	500	IMP	N9-C4-N3	2.29	132.11	126.90
2	C	500	IMP	C6-C5-N7	2.28	134.44	130.29
3	D	501	8L1	C19-C20-CL	2.26	124.34	121.01
2	C	500	IMP	N9-C8-N7	-2.25	109.23	113.40
3	A	501	8L1	F1-C29-C27	-2.23	108.28	112.86
3	C	501	8L1	C13-C11-C12	-2.22	107.02	109.50
3	D	501	8L1	C21-C20-C19	-2.22	118.90	121.36
3	C	501	8L1	C8-C7-N1	-2.20	117.47	123.59
3	B	502	8L1	C13-C11-C12	-2.20	107.04	109.50
2	B	501	IMP	N9-C8-N7	-2.17	109.38	113.40
3	D	501	8L1	F2-C29-C27	-2.15	108.45	112.86
3	A	501	8L1	C11-N3-C10	2.15	128.47	124.01
2	D	500	IMP	C6-C5-N7	2.13	134.17	130.29
3	B	502	8L1	C8-C7-C5	2.13	122.93	119.48
2	A	500	IMP	C6-C5-N7	2.10	134.10	130.29
2	D	500	IMP	C4-C5-N7	-2.09	107.36	110.67
3	D	501	8L1	C6-C5-C7	-2.09	117.65	120.53
2	A	500	IMP	N9-C4-N3	2.04	131.55	126.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	501	8L1	C13-C11-C1	-2.02	105.47	110.54

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	501	8L1	C26-C27-C29-F1
3	D	501	8L1	C26-C27-C29-F2
3	D	501	8L1	C26-C27-C29-F3
3	C	501	8L1	C20-C19-C24-N5
3	A	501	8L1	N5-C27-C29-F1
3	A	501	8L1	N5-C27-C29-F2
3	B	502	8L1	N5-C27-C29-F1
3	B	502	8L1	N5-C27-C29-F2
3	C	501	8L1	C18-C19-C24-N5
3	A	501	8L1	C20-C19-C24-N5
3	C	501	8L1	C20-C19-C24-S
3	A	501	8L1	C18-C19-C24-N5
3	A	501	8L1	N5-C27-C29-F3
3	B	502	8L1	N5-C27-C29-F3
3	C	501	8L1	N5-C27-C29-F3
3	C	501	8L1	C18-C19-C24-S
3	A	501	8L1	C18-C19-C24-S

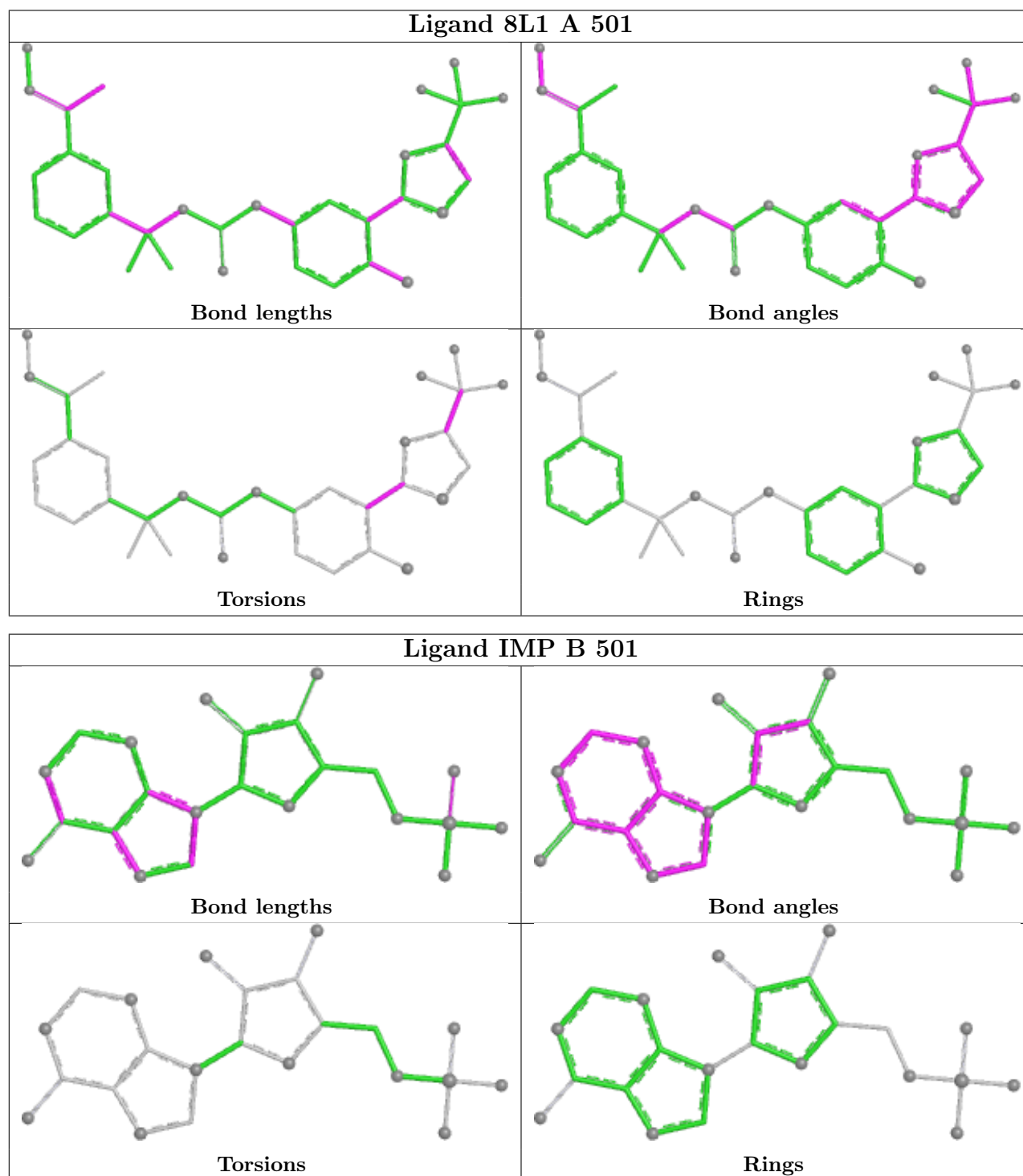
There are no ring outliers.

7 monomers are involved in 8 short contacts:

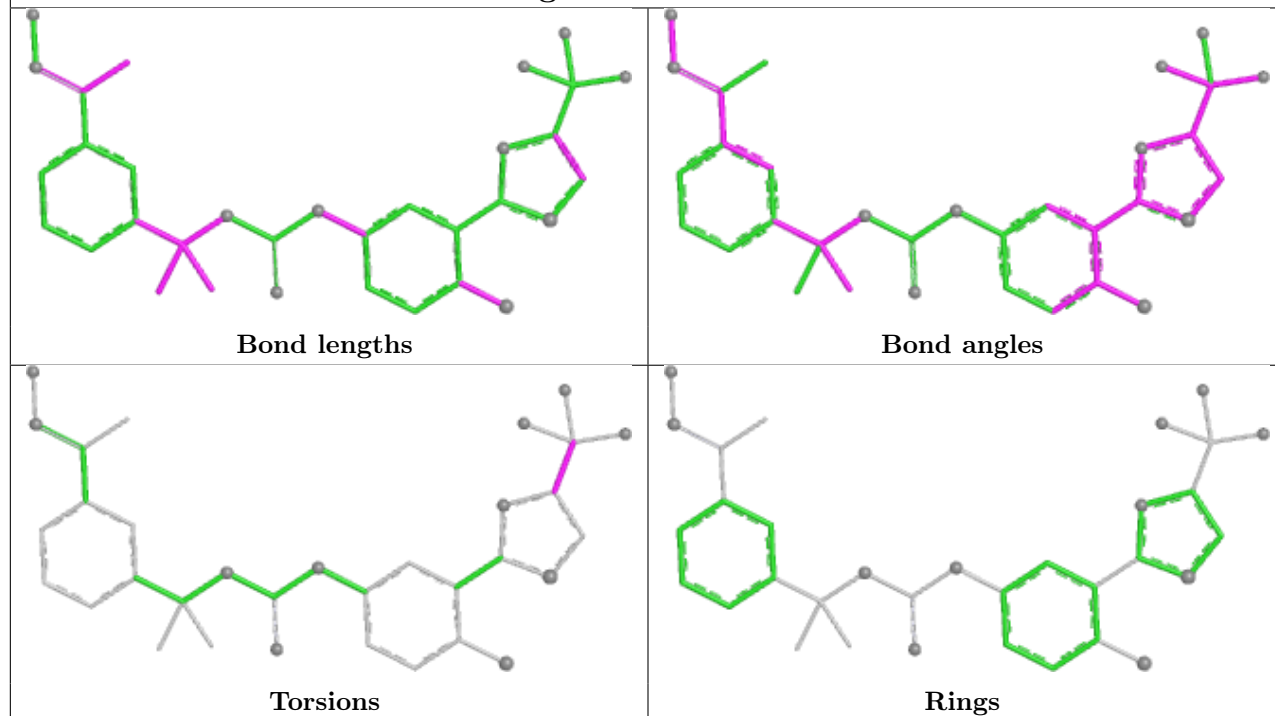
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	501	8L1	1	0
2	B	501	IMP	1	0
3	D	501	8L1	1	0
3	B	502	8L1	1	0
2	A	500	IMP	1	0
3	C	501	8L1	1	0
2	C	500	IMP	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be

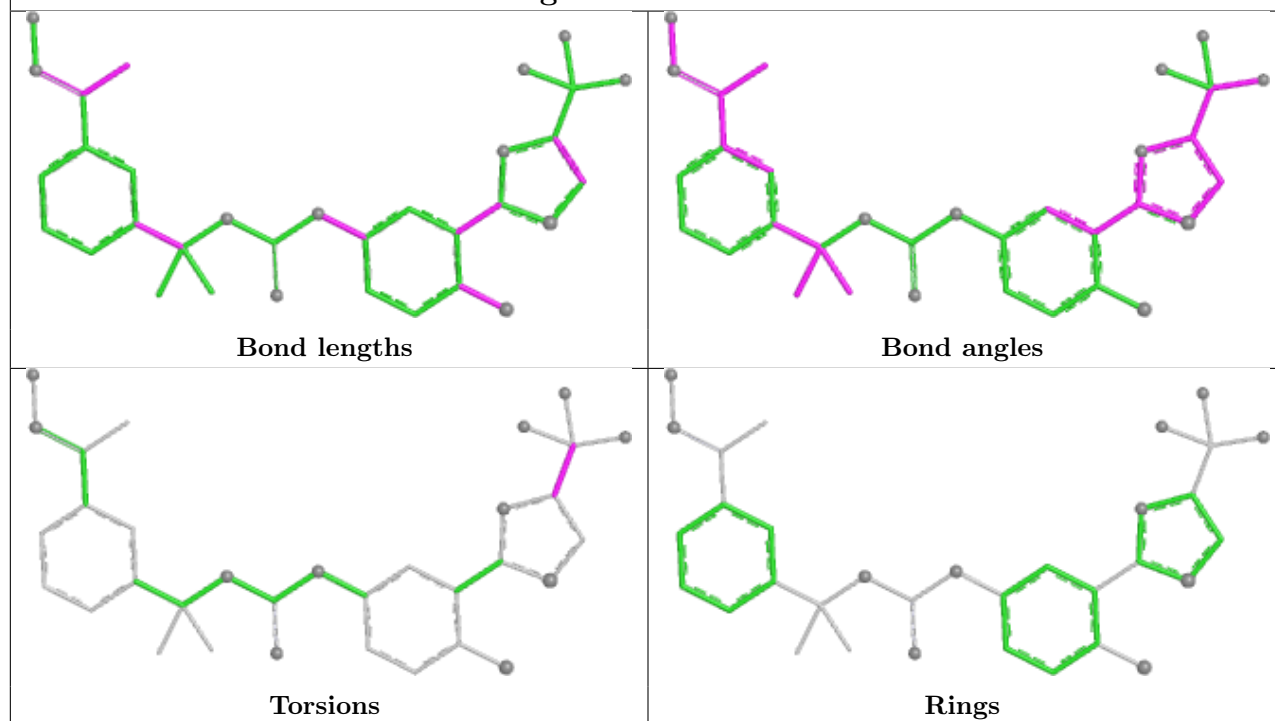
highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



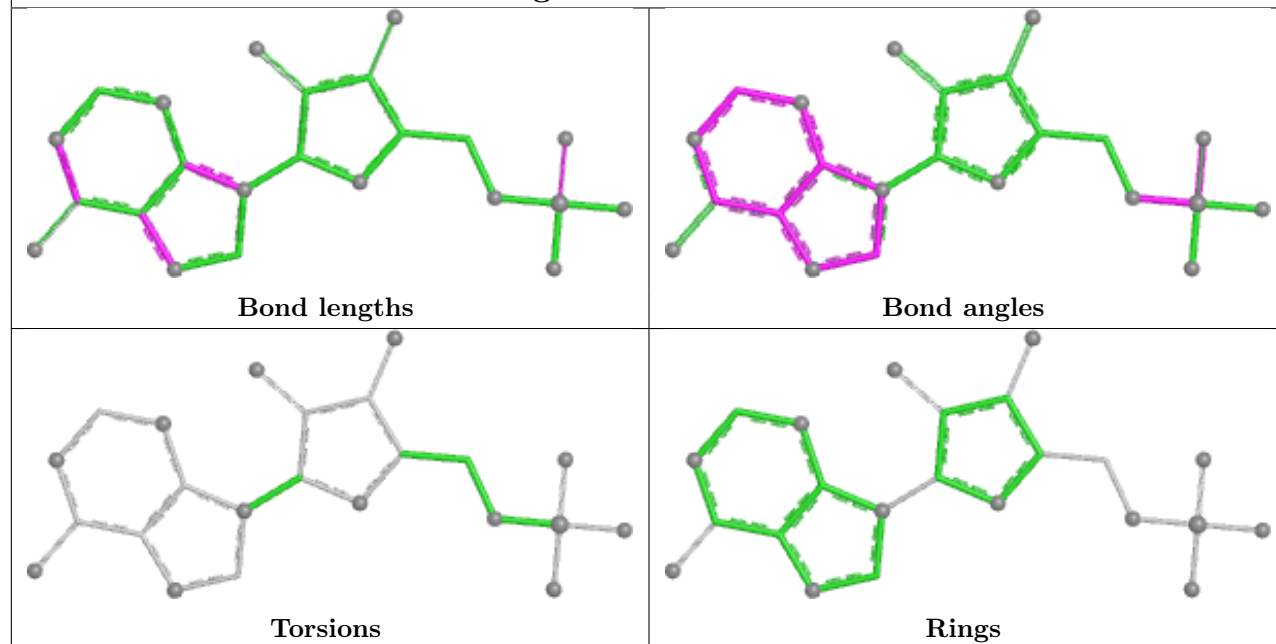
Ligand 8L1 D 501



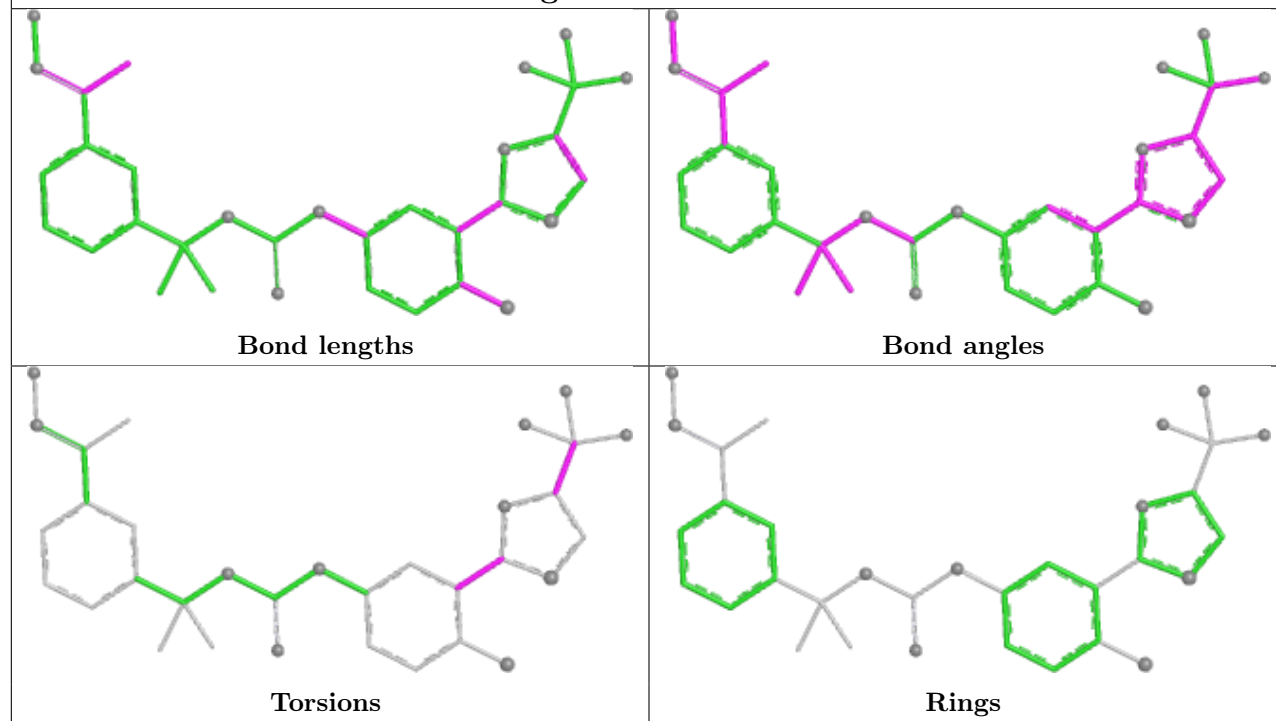
Ligand 8L1 B 502

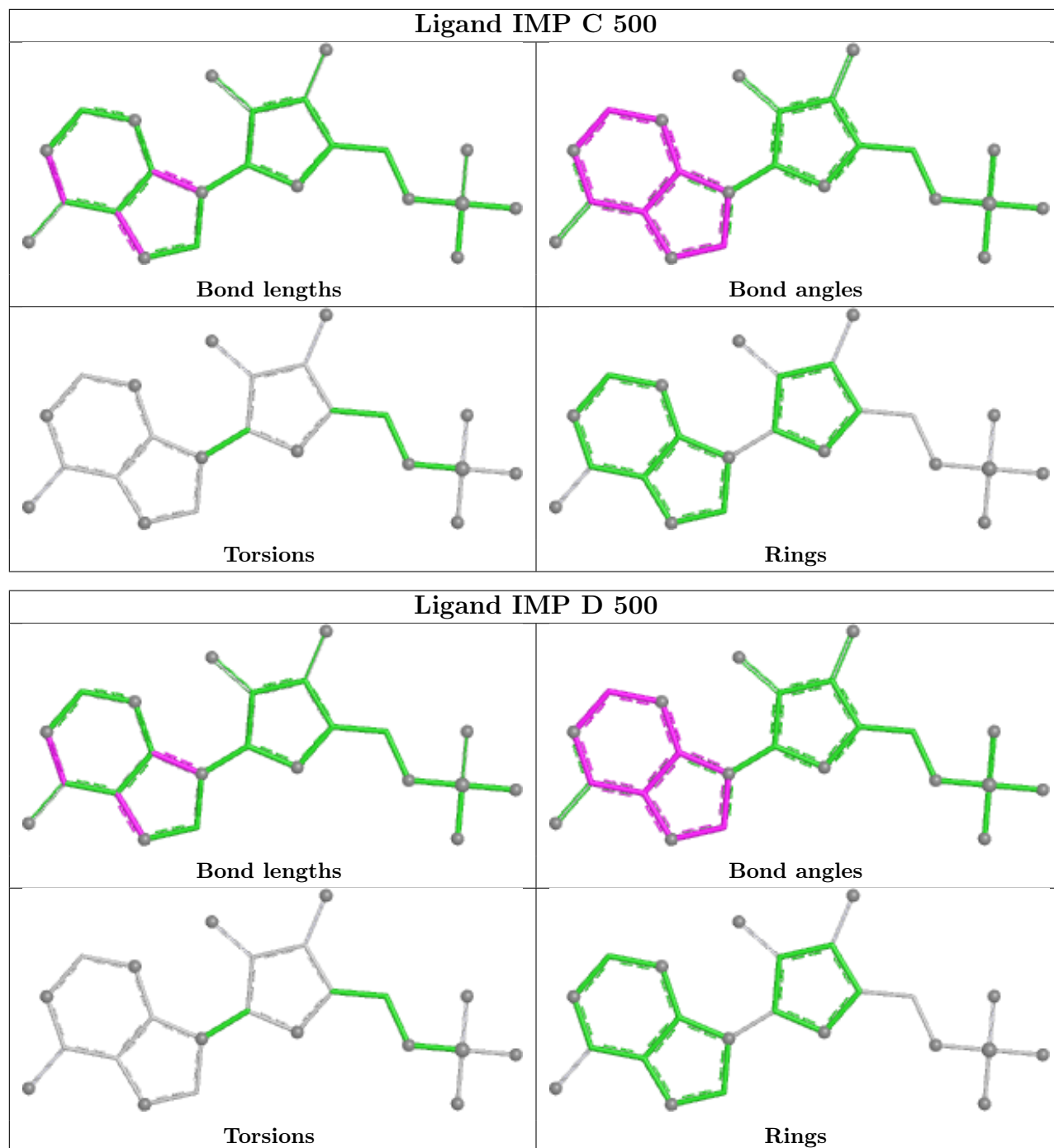


Ligand IMP A 500



Ligand 8L1 C 501





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	341/363 (93%)	-0.06	2 (0%) 85 86	28, 44, 65, 87	0
1	B	343/363 (94%)	-0.07	2 (0%) 85 86	28, 45, 70, 98	0
1	C	341/363 (93%)	0.19	2 (0%) 85 86	30, 54, 81, 100	1 (0%)
1	D	342/363 (94%)	0.15	2 (0%) 85 86	29, 51, 83, 115	0
All	All	1367/1452 (94%)	0.05	8 (0%) 85 86	28, 48, 77, 115	1 (0%)

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	222	ILE	2.7
1	A	5	LEU	2.6
1	B	4	ILE	2.4
1	C	481	SER	2.2
1	D	408	PHE	2.2
1	B	389	LEU	2.1
1	A	26	ASN	2.1
1	D	243	ILE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands

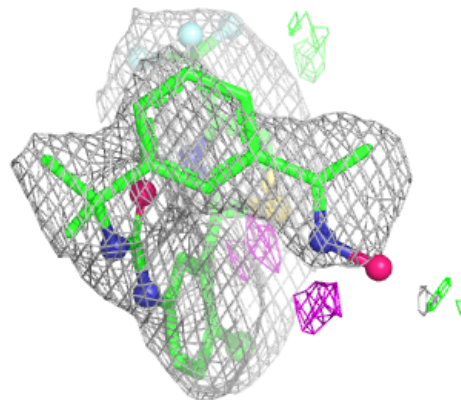
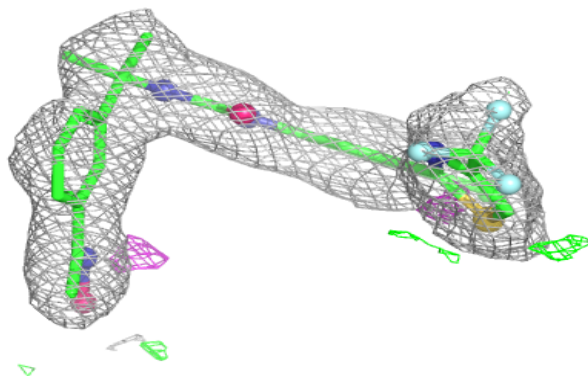
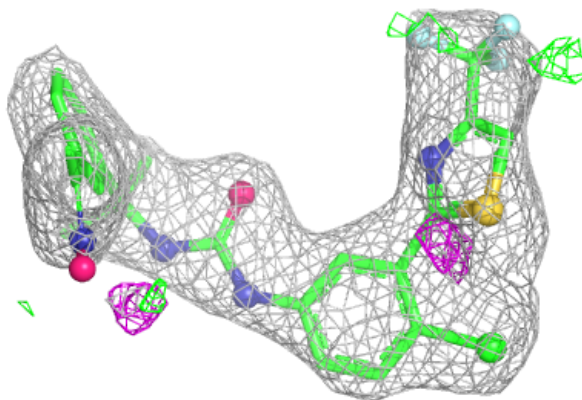
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	GOL	B	504	6/6	0.84	0.12	63,70,73,76	0
3	8L1	C	501	33/33	0.86	0.12	34,61,94,95	0
3	8L1	A	501	33/33	0.90	0.09	34,48,75,81	0
3	8L1	D	501	33/33	0.91	0.10	37,50,74,76	0
3	8L1	B	502	33/33	0.92	0.10	28,43,78,81	0
2	IMP	C	500	23/23	0.93	0.07	29,39,44,45	0
2	IMP	A	500	23/23	0.95	0.06	27,35,42,43	0
2	IMP	D	500	23/23	0.96	0.06	29,40,46,46	0
2	IMP	B	501	23/23	0.96	0.06	30,40,45,49	0
4	K	B	503	1/1	0.97	0.10	46,46,46,46	0
4	K	A	502	1/1	0.97	0.07	36,36,36,36	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

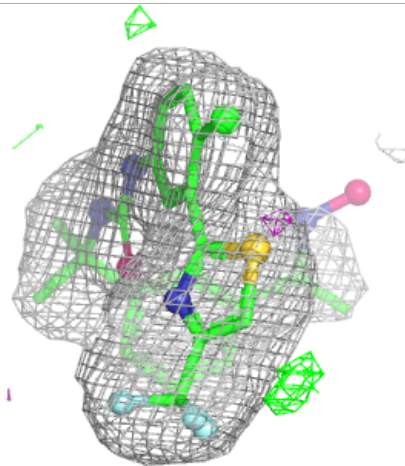
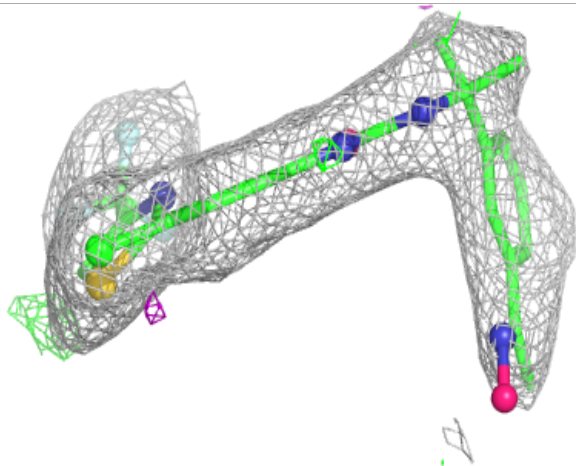
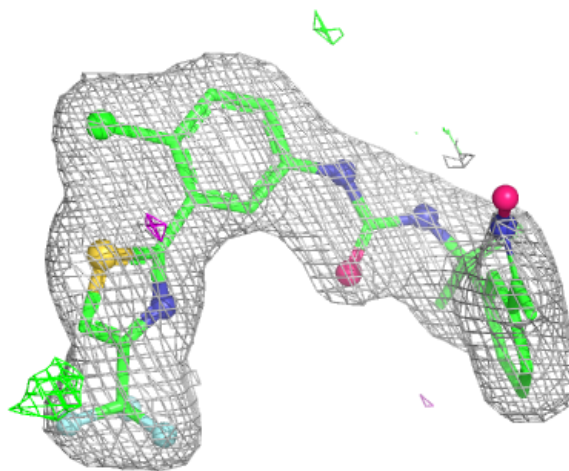
Electron density around 8L1 C 501:

$2mF_o - DF_c$ (at 0.7 rmsd) in gray
 $mF_o - DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)



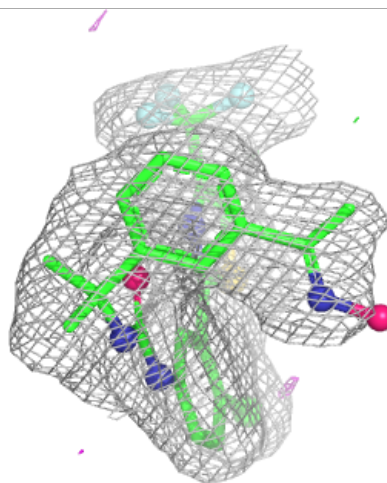
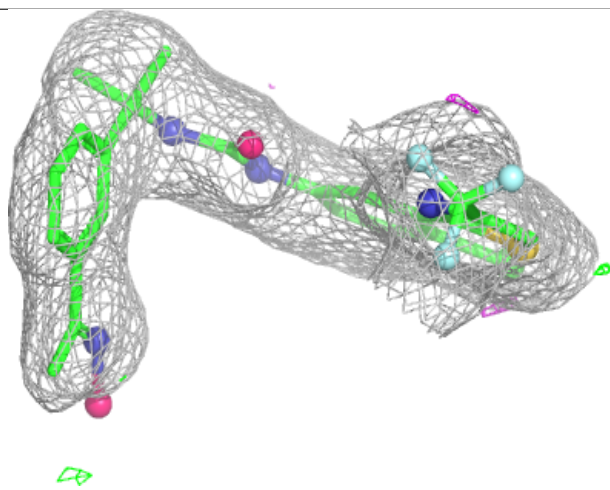
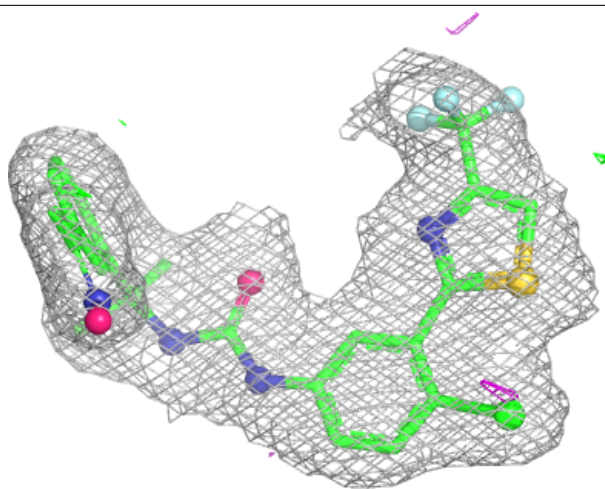
Electron density around 8L1 A 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



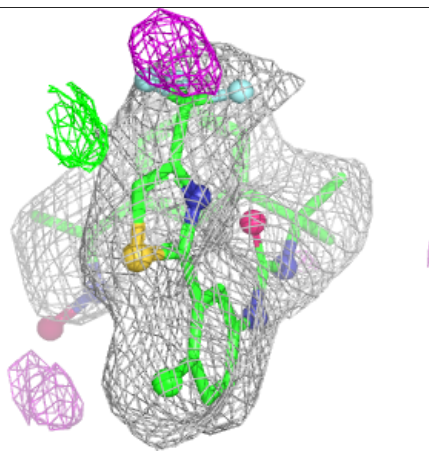
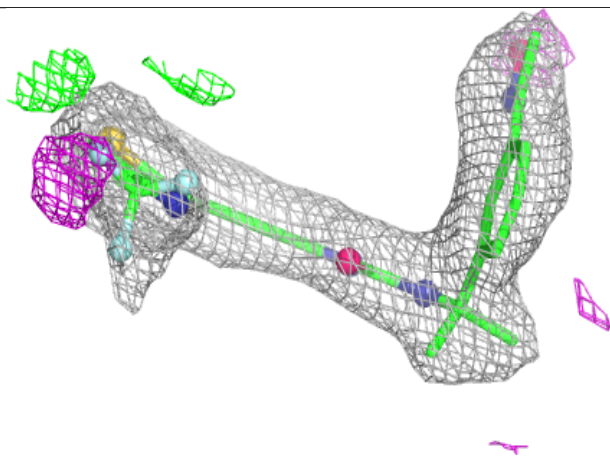
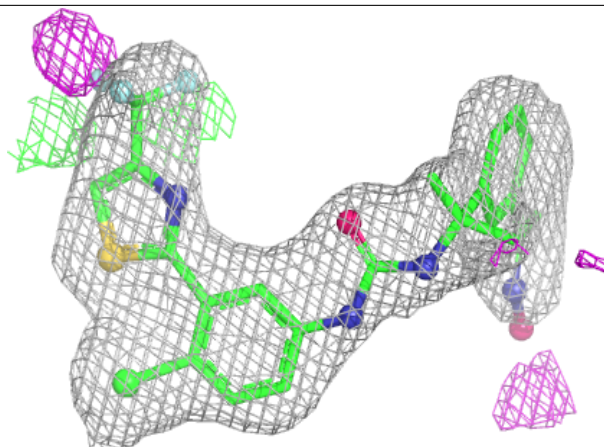
Electron density around 8L1 D 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



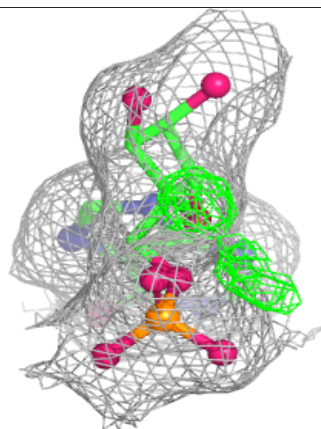
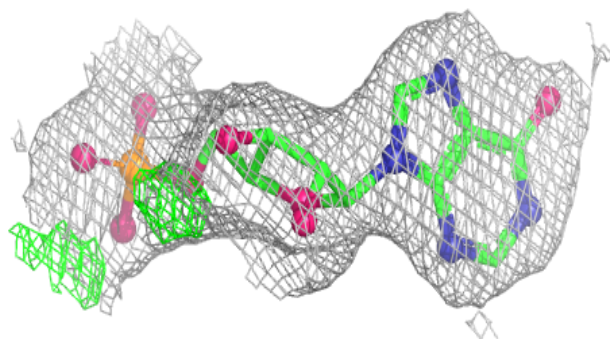
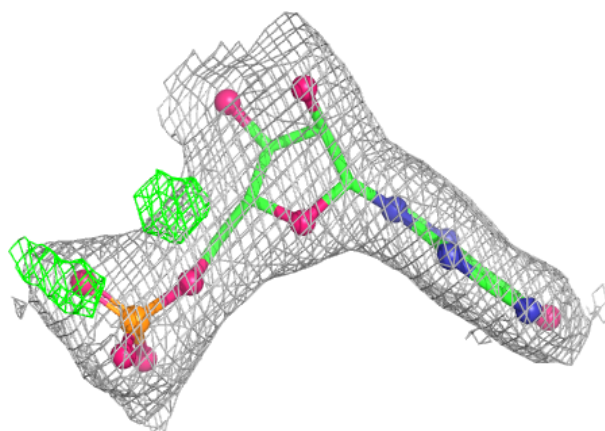
Electron density around 8L1 B 502:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

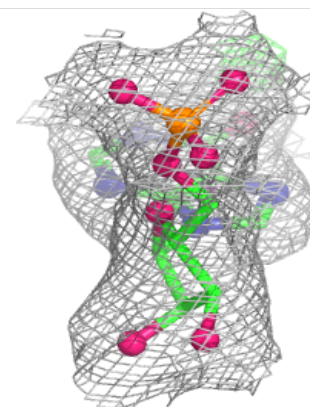
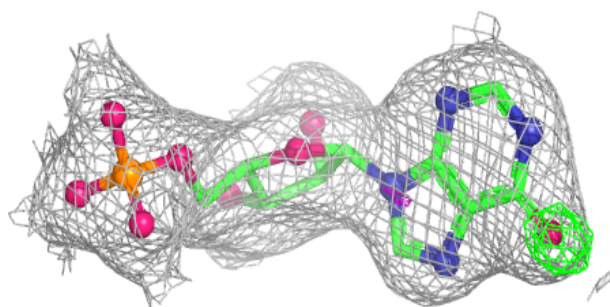
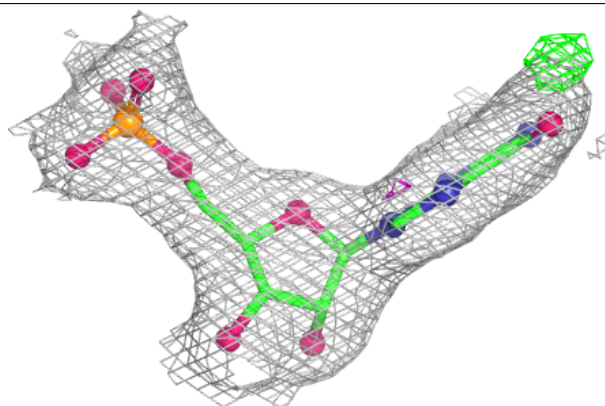


Electron density around IMP C 500:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

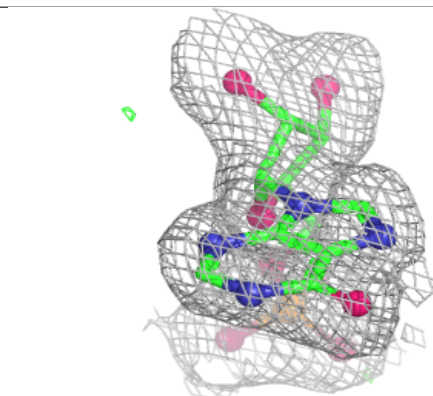
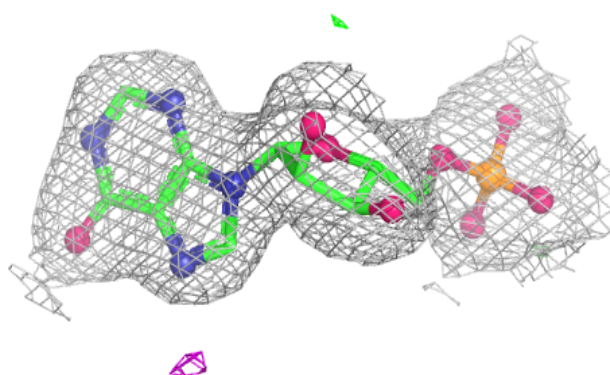
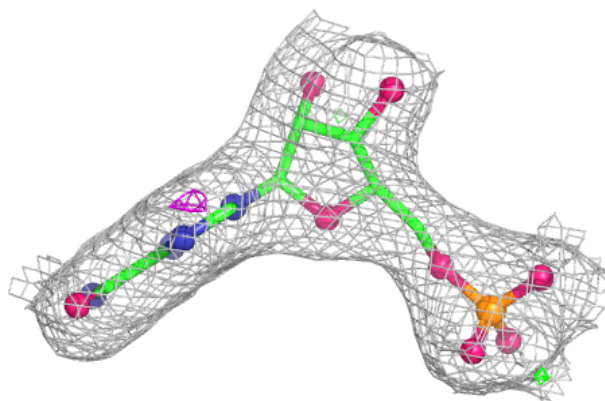
**Electron density around IMP A 500:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

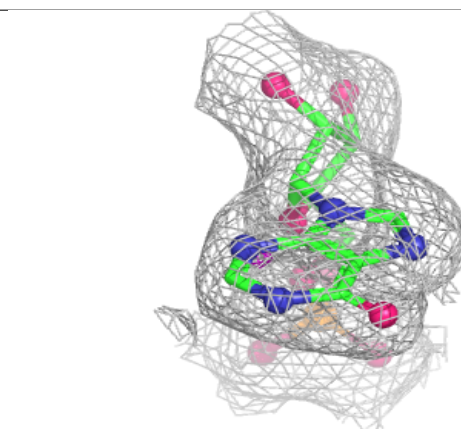
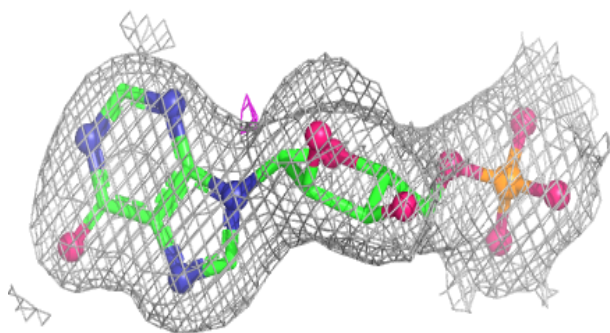
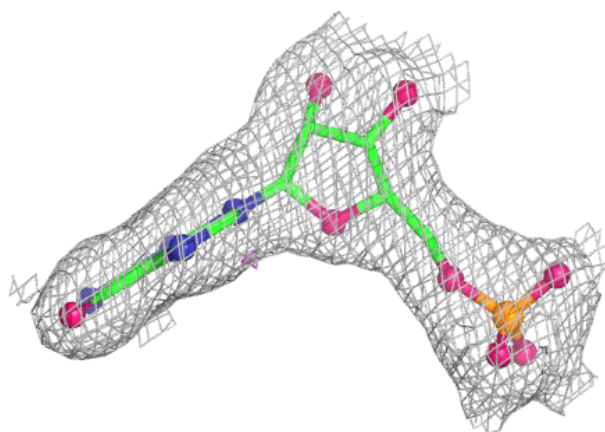


Electron density around IMP D 500:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around IMP B 501:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.